

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA

v.

22-CR-6009-CJS-MJP

JOHN DOUGLAS LOONEY,

Defendant

**DEFENDENT'S MEMO IN PREPARATION FOR AUGUST 14,
2023 ORAL ARGUMENTS**

We assert that the government did not provide probable cause to the Magistrate that child pornography was on the defendant's computer.

The government in this case must show that the defendant was attempting to download files of suspected child pornography from the Freenet network. The government claims to have a Formula that will differentiate between a downloader and relayer of pieces of the files of interest.

We have found that there seem to be two definitions of the government's Formula which we have not been able to reconcile. First is the Formula from the 2017 Levine paper, which the prosecution has stated is meaningless to anyone who does not have a degree in mathematics (Govt. Doc. 80, p. 11). Whenever we are referring to this Formula we will capitalize the word.

The second definition of the formula is the simplistic method used by Officer Turner - defined as requests/peers. This is shown in Officer Turner's Figure 1. When we refer to this version we will not capitalize and will italicize the word - *formula*. We will attempt to keep the two versions separate with this technique.

The prosecution states in the Doc. 80, p. 11 response that Officer Turner provided a laymen's description of the Formula to Judge Payson, but Officer Turner did not provide this description in the Affidavit and if the description is of the *formula*, we do not believe it can be reconciled with the Formula.

Within Freenet files are continuously being requested and relayed between Freenet nodes. Freenet is designed to make it impossible to identify an original requestor, i.e. downloader, from a simple relayer which is the normal action of Freenet nodes. The Formula which is never explained by the government is not clear to us and as a probability equation we have not seen any probability numbers in the Affidavit.

We believe the government does not use the Formula, but instead uses the *formula*. Then the *formula* assumes that this number of pieces is evenly distributed to each peer in a method referred to as even share. Each peer, including the FBI node, receives the same number of requests, and if the FBI node receives this number then the *formula* flags the node and assumes that the FBI is connected to the downloader. The method requires an expectation of the number of requests that would be received from the downloader. This is shown in Officer Turner's Figure 1 illustration. This method is unmistakably proven to be false by the FBI's data in several cases such as Corbett and McF.

Why is FOAF important? As we have shown, FOAF routing makes it impossible to predict the number of requests that would have been received by a connected node.

With FOAF routing, the number of requests expected from a suspect are not predictable.

FOAF is not particularly complicated. Within Freenet, files are broken into thousands of very small pieces. One of the three files in the current case was broken into over 7,000 pieces, and additional pieces were added by normal operation of Freenet for a total of over 15,000 blocks. Each of those pieces has an address (location) attached which is calculated from the content based hash of the block. The location is very much like a postal zip code. If we see a zip code of for example 56075, we don't know where that location is, but if we send requests to the node that has a location closest to 56075, we will eventually get there. When the file is inserted, those pieces are sent towards nodes at locations closest to their attached addresses. So if the block had an address (location) of 98405, it would be sent towards a node closest to 98405. In this way the blocks of a file with similar content are sorted together. So all the blocks with addresses close to 56075, (as shown by the zip code), would end up located in the same general area within Freenet.

Now if we want to download the file, we send the requests for blocks to the addresses associated with each block. This means sending the requests addressed close to Michigan, by zip codes, to the closest FOAF node to Michigan. Assuming the suspect has 50 peers, and each of those peers of the suspect has 50 peers, then this suspect has $50*50$ FOAF nodes for an estimated 2500 FOAF nodes. But the government cannot see these 2500 FOAF nodes, so it is impossible for them to estimate how many requests the FBI node will receive. The FBI node could receive any number of requests depending upon the location of the FBI node, the locations of the FBI nodes' peers, and the locations of the 2500 FOAF nodes.

The number of requests received by the FBI node is meaningless; it is based upon a false methodology (even share), and has no credibility. So if we know that the

requests will be filled at 56075, why not just send the requests directly there? The reason is that the downloader does not know where to find 56075. Assume you live in Maryland, (21202), and want to go to 56075, but you do not have a map. The best you can do is to go in the direction of Michigan (56075), using zip codes, by going to the closest zip code that you can find and keep going from zip code to zip code. This is a small world model, and eventually you will get to Michigan without ever having a map. This is FOAF routing.

As Levine says at the Dickerman evidentiary hearing, p. 169: *"And so, again, there's intricacies to Freenet, but I'm not trying to estimate how many requests you receive."* Of course the method described by Officer Turner is to estimate the number of requests that a directly connected node will receive. See Figure 1 in the affidavit. This is the basis of the government case.

The government refused to admit that Freenet used FOAF routing, and not until the time of the oral arguments did the prosecution admit that Freenet used FOAF routing. At that point the prosecutor changed the argument to "theory versus design". That is, while the Freenet developers intended to use FOAF routing, in practice it actually worked as an even share model. *"But theory and design are different than practice. Ofc. Turner's affidavit asserts that, in practice, when Freenet's nodes follow all the complex friend of a friend routing directions that the source code dictates, the result is that requests for blocks end up being distributed in roughly even shares among a user's peers."* This statement is absurd. The prosecution apparently came up with this theory after reading one of our exhibits: "Measuring Freenet in the Wild" from 2014. This paper determined that Freenet was allowing too many distant (location) nodes to connect when the node was initially started. This resulted in slow response to requests, and sometimes not finding a requested block. There was no claim that FOAF did not work. In addition, the data from the FBI for the Corbett and McF cases dramatically show that the number of requests is not even, roughly or not. Freenet developers

fixed the slow response problem in 2014, and Freenet has been working well ever since.

The prosecution argued consistently that Officer Turner never used the term "even share" in the Affidavit, however the spreadsheet with this case (p. 12 herein) refers to % of even share of total blocks and % of even share of min. blocks with the conclusion of "pass". We pointed out that while he did not directly use the words, this was what he always described: *"Rather than request all the blocks from a single peer, the Network software divides the requests for blocks into roughly equal amounts among the requesting user's peers."* (Affidavit p. 4). The prosecution uses this bizarre term "roughly" even, to explain the widely divergent results. For example, *"In actuality, the nodes received requests for 29, 17, 11, and 10 blocks, respectively. It is fair to say that this distribution of requests is "roughly even."* (Govt. Reply Doc. 80. p. 7). Based upon what? Roughly is not a mathematical term, and division is always exact. In no universe are 29 and 10 roughly even. 29 is three times 10 and the prosecution is attempting to come up with an explanation for results that do not fit their model. The prosecution provides no explanation for why they consider these requests "roughly" even.

In the government's response to our motion, Doc. 80, they spend pages 4 to 7 discussing the "roughly" even issue. Why do they consider this so important that it becomes a central issue? As we have pointed out previously, with FOAF routing the number of requests is meaningless and cannot be determined by the FBI method since it is determined by the locations of the FBI node, FBI peers and all the suspect FOAF peers. As the prosecution has pointed out several times, law enforcement has been investigating Freenet since 2011, and produced the Black Ice Project document in 2013. A quick review of that paper shows a description of FOAF routing and at no point do they describe the requests being divided roughly evenly or by even share. Why has the government ignored the results of previous work by law enforcement?

Then there is the Formula:

$$Pr(H1|r) = \frac{\frac{1}{g+1} B(r; T, 1/g)}{\frac{1}{g+1} B(r; T, 1/g) + \frac{g}{g+1} B(r; T, 1/gh)}. \quad (6)$$

This Formula supposedly calculates the probability that the suspect is a downloader given 'r' requests received by the FBI. The Formula is referenced 18 times in the Affidavit as the basis for Officer Turner's methodology, and how the conclusions are reached in ¶61 to ¶63, where we find this statement: "*According to the previously discussed formula, given these values, it is substantially more likely than not that the user was the original requestor*".

The prosecution provides a complete explanation as to why the Formula was not explained in the Affidavit: "*Ofc. Turner initially provided a copy of Dr. Levine's 2017 paper (Dkt. 78-4), which includes the Formula, to Judge Payson. However, the Judge returned the paper and asked Ofc. Turner to summarize the Formula in laymen's terms. Without explanation, the Formula is meaningless to anyone who does not have a degree in mathematics. It was much more appropriate for Ofc. Turner to explain the theory and application of the Formula to Judge Payson than it would have been to present her with a Formula that she did not and could not understand*".(Govt. Reply Doc. 80 p. 11-12)

The government cites United States v. Gray, 2022 WL 11588923, which states it is not necessary to provide specific details to meet the low bar of probable cause, however, the United States Court of Appeals for the 8th Circuit in the Dickerman case noted the issue with describing complex technology in a warrant: "*As investigative techniques get more sophisticated, affiants should be mindful to explain their basis for probable cause in a way that is sufficiently comprehensive but still accessible to the judge reviewing the warrant application.*"

If Officer Turner could explain the Formula to Judge Payson, why did he not simply put that explanation into the Affidavit? We still have not seen any explanation of the Formula. The government still has not provided a simple explanation of the Formula. The government has never provided an independent test and verification of the Formula. Nor has the Affidavit provided a result in the case herein using the Formula.

The Corbett issue. The prosecution argues that this case is meaningless since it occurred after the case herein from 2019. But the prosecution ignores that Corbett proves that the Levine method is totally false. This proof has been known since 2017 in the Dickerman case, which used and described even share. The Officer in Dickerman, with Figure 1 explains the number of requests is divided by the number of peers and the resulting number of requests are evenly distributed to each peer. In Dickerman, for FOI #1 the downloader needed 783 blocks and had 56.9 peers, so according to Figure 1, (which was the same in 2017, 2018, and in 2020), 13.8 requests should have been sent to each peer, including the FBI node. Instead 69 requests were received by the FBI node. This is not the predicted number but it was clearly enough for the FBI to claim probable cause. For FOI #2 the predicted number based upon the Levine method was 9.0 versus the actual number of 67. And for FOI #3, the predicted number was 9.9 versus the actual 31. Here, in Dickerman, while describing Freenet by an even share model, all three FOI's did not meet the even share model, yet the government claimed success in identifying the downloader using this method.

This means that the FBI and government have been knowingly using a false method to identify downloaders since at least 2017, and into at least 2020 with Corbett. This explains the fact that the government has not provided any independent testing of the Formula, even while using the Formula as the center point of their investigations. Nor has the government felt the need to actually explain the Formula, even while

stating that the Formula is meaningless to anyone without a degree in mathematics. This is why the prosecution has had to use the absurd 'roughly' even argument to explain the widely divergent numbers of requests.

In the government response to our motion, the prosecution states: *"However, Dr. Levine's testing has shown that an even share model does, in practice, accurately predict whether a particular device is an original requestor. Dr. Levine has tested the model in Freenet. And it accurately identified an original requestor in all but approximately 2% of cases. The model is not an exact re-creation of Freenet's software (statistical models rarely ever are). But, notwithstanding any differences between the model and Freenet, Dr. Levine's testing has proven that the model accurately predicts whether a particular device is the original requestor of a file."* The prosecution here states that the model which is the basis of the Formula is not an exact re-creation of Freenet's software, but the model accurately predicts whether a particular device is the original requestor, based upon a flawed test made by Levine. This statement is made at the same time as we have shown demonstrably with Corbett and McF that the even distribution of requests does not happen, and the methodology is false.

The timing data showing how much time was required to receive the requests has been removed in the 2019 version. This data was important in the case herein and exculpatory. For Dickerman it took less than 2 minutes, (see overall runtime number) to receive all 69 requests. This seems reasonable since the FBI node is directly connected, and there should be no delays in getting the requests.

Data from Dickerman case 11/2016:

Freenet Target Files Summary			Return to Detail Page
IP Address: 172.12.235.62			
Geo Location: Saint Louis			
File of Interest #1			
File Name:	April - Another Set 2 (set 2).zip		
SHA1 Hash:	BODS262HHKS3VS4FLQSOAAVWTOE5FAW		
Probable Manifest Key:			
Data Blocks	783		
First Block Observed:	2015/04/02 23:08:56	2015/04/02 23:08:56	2015/04/02 23:08:56
Last Block Observed:	2015/04/02 23:10:54	2015/04/02 23:10:54	2015/04/02 23:09:45
Overall Runtime:	0:01:58	0:01:58	0:00:49
Average Peers	56.9	56.9	56.9
Total Unique Requests Logged	69	69	69
% of Total:	8.81%	8.81%	8.81%
% of Even Share:	501%	501%	501%
Frequency Group	2 Records per second:	10	10
	3 Records per second:	2	2
	4 Records per second:	1	1
	5 Records per second:	1	1
	6 or more records/sec:	4	4

11/3/2016 14:25

For the case herein, it took 3 hours, 36 minutes, to receive the 69 requests. The only explanation for this is that the defendant was not the downloader but a relayer. The defendant received the requests from the downloader, when it worked down its internal request queue (which would take time depending upon the size of the queue), and then relayed the requests to the FBI node, the FBI falsely flagged the defendant as the downloader. This timing in the case herein is consistent with there being intermediary nodes (not the downloader).

In 2018, the word Pass was added to a column to flag the suspect as the downloader of a file of interest, and the timing data is excluded. We have requested a copy of the actual Excel spreadsheet to evaluate the *formula* used by the Excel spreadsheet to reach the "pass" conclusion.

Data from the case herein 9/2018:

Freenet Target Summary				
IP Address:	67.246.249.46			
Geo Location:	US, NY, Fairport	Spectrum		
Location ID:	0.095416951978324			
File of Interest #1				
Possible File Name:	Gordo - Pedro (Ptbc) - 2 8Yo Mexicans Preteens With			
SHA1 Hash:	NACCZDDEGDSKICMA6JCEGCVHLEUBBEAN			
Possible Manifest Key:	0VM181Ai06gEVNHGgL7469ppfQKf~DRF40bJJ20,AAMC-- 8/Gordo%20-%20Pedro%20%28Ptbc%29%20- %20%208Yo%20Mexicans%20Preteens%20With%20Male.			
Minimum Blocks Required:	6,374	Total Blocks:	12,562	~File Size(KB): 203,968
	Overall Totals:	Filtered: 72 Rows	LE # 2160	
First Block Observed:	2018/09/11 00:32:29	2018/09/11 00:32:29	2018/09/11 00:32:29	
Last Block Observed:	2018/09/11 04:09:24	2018/09/11 04:09:24	2018/09/11 03:49:59	
Overall Runtime:	3:36:55	3:36:55	3:17:30	
Average Peers:	69.2	69.2	69.4	
Total Unique Requests Logged:	69	69	69	
% of Even Share of Total Blocks:	38%	38%		
% of Even Share of Min. Blocks:	Pass	75%	75%	

9/19/2018 8:16

Below we show the data from the McF case which was earlier than the case herein and would have been available to Officer Turner. In this case, which we refer to as McF, note that there is data from two FBI nodes which is added together and shown in the Overall column with the "pass" status.

The following ¶ is from the Affidavit for the McF case, it states about FOI #2: "34. I observed that between Wednesday, April 25, 2018 at 00:36 AM UTC and Wednesday, April 25, 2018 at 01:40 AM UTC the Freenet node at IP address ¶ xxxxxxxx with an average of 55.7 peers, requested from a law enforcement computer 298 out of 7,163 required pieces needed to assemble a file with a SHA1 digital hash value of UYDIWBRB4J6A67RDFFV4PN564 XGFJS6, This file can be downloaded from Freenet using the key:"

There is no mention in the Affidavit of the presence of two FBI nodes and that the data shown in the Affidavit is invalid. Although explicitly stated, no FBI computer received requests for 298 pieces of a file. The results of these FBI nodes cannot be combined but must be handled individually.

The results in McF show that the methodology described by Officer Turner is false. This case is prior to the case herein and Officer Turner would have known about this case which blatantly disproves the Officer Turner methodology.

Data from McF case 7/2918:

Freenet Target Summary					
IP Address:	173.202				
Geo Location:	US,WI, Spectrum				
Location ID: [REDACTED]					
File of Interest #2					
Possible File Name:	Daphne-9yo-Dutch-girl.mp4				
SHA1 Hash:	UYDKDBRB4J6A67RDFV4PN564XXGFJS6				
Possible Manifest Key:	CHK@a0VQm6o2uLR6QrHCqzqjtOVQ-01NNMoGU2xAHIMSDrc,CkCw9lx844AN~5pMxhP488cTgpA4qqwW0g-6nkqOgDc,AAMC-8/Daphne-9yo-Dutch-girl.mp4				
Minimum Data Blocks Required:	7,163	Total Blocks:	14,108	~File Size(KB):	229,216
First Block Observed:	2018/04/25 00:36:28	Overall Totals:	Filtered: 310 Rows	LE # 837	LE # 1774
Last Block Observed:	2018/04/25 01:40:43			2018/04/25 00:36:28	2018/04/25 00:36:36
Overall Runtime:	1:04:15		1:04:15	0:29:31	1:04:02
Average Peers	55.7		55.7	56.1	55.4
Total Unique Requests Logged:	298		298	96	202
% of Even Share of Total Blocks:	Stat Test:	118%	38%	79%	
% of Even Share of Min. Blocks:	Pass	232%	75%	156%	

We pointed out that the even share method used in Dickerman, McF, and the case herein, was false and the FBI data conclusively proved this. We now have data in addition to McF, from Corbett, and Case X using the Levine methodology, which dramatically prove that Freenet does not use even share. Even share is defined by Figure 1 in Officer Turner's description. With even share each peer will receive the same (even share) number of requests. The data from McF, Corbett, and the Case X, spreadsheets all show that requests are not distributed evenly.

From government response to our motion: "*Ofc. Turner's affidavit asserts that, in practice, when Freenet's nodes follow all the complex friend of a friend routing directions that the source code dictates, the result is that requests for blocks end up being distributed in roughly even shares among a user's peers.*" (Govt. Reply Doc 80 p. 7,8). We found no such

assertion in the Affidavit, and after reviewing 27 different instances of FBI data, it is clearly evident from the multiple FBI spreadsheets that the distributions of requests are clearly not distributed in roughly even shares.

The Court has asked us to describe what is wrong with Levine's statements. This is a reasonable request but difficult to answer. In the 2017 Levine paper, Levine states: *"When sending a request, a node attempts to send it in the direction of the node closest to the block's location. Freenet performs friend of a friend routing: nodes have visibility to their immediate peers' locations, as well as the locations of their peers' peers."* Then he states: *"We construct a model by assuming that each request the downloader makes is sent to exactly one of its peers, and that the selection of that peer is made uniformly at random."* But friend of a friend routing is not random, the request is sent toward the node closest to the blocks location. These statements are inconsistent.

At the Dickerman evidentiary hearing Levine shows how difficult he can be in getting a simple answer.

Questions by Adam Fein, Esq [defense] -- Answers by Dr. Levine (with emphasis added):

Q Do you know if requests that are sent by a requester are uniformly distributed among peers?

A That's a very interesting question, so I've tried to evaluate that question. And in the experiments that I have done I wouldn't say there -- So can you rephrase the question again? What precisely are you asking?

Q Yes. Are there -- Are the requests sent by requesters or submitters uniformly distributed among its peers?

A So when you say uniformly distributed, you know, when I hear that, I say: Is that easily modeled by what's called the "uniform distribution"? Okay? **So that doesn't mean to me are they exactly evenly distributed.** It means would we expect, an expectation, would they be uniformly distributed. So I've analyzed that question in simulation and the answer is: They are approximately uniform.

Q Approximately uniform. (emphasis added)

A Yeah.

Q What is it that prevents you from saying they are, in fact, uniform?
A They are easily modeled by a uniform distribution is a better answer.

Q Forgive me?
A They are modeled well by a uniform distribution is a good answer to your question.

Q Okay. Tell me if this makes sense: How much closer to uniform does the distribution get per hop?
A How much closer does the distribution get to uniform at each hop? I've never thought about that question, so I don't know.

Q Okay. How did you make the determination that uniform distribution is an accurate model for request distribution when -- when a few hops away from the requester?
A In fact, what I came to the conclusion was that a uniform distribution was a good model for distinguishing the relayer and the requester.

(Dr. Levine determined the method by finding a model that would give the answer he wanted - not trying to model the actual operation of Freenet. Specifically, Levine will not say that a uniform distribution is an accurate model of Freenet. He started with the answer and worked backwards.)

Q How did you reach that --
A So, again, ---

Q How did you reach that?
A How did I reach that?

Q Yes.
A I created a model of Freenet topology and routing algorithm along with my colleagues. We together created a model -- a simulation rather of Freenet's routing and -- and topology which is something that's been done in previous papers. We sent out in the model -- Without going through all the details, --

Q Sure.
A -- but we sent out requests. What was a -- I mean this is a simulation, so there were no actual requests here. So don't -- don't mistake my meaning, but we sent out requests for -- for pieces of a file and we watched where they went. And then we looked at, from the simulation results which we ran, you know, an enormous number of files using a compute cluster, whether the distribution was about even or -- or, to be more frank, whether assuming that you could model it with a uniform distribution would allow you to accurately distinguish the relayer and the requester. So, again, I'm not trying to estimate the number of requests you would get precisely but, rather, whether you can distinguish these two roles.

Q Okay. How -- If you know, how closely did the simulator reflect real world Freenet topology?

A So that's a -- that's a good question. So I think fairly well, so here's why: Freenet is designed to approximate what's -- a particular topology. It's called a "small world topology." Actually relates to the whole idea of six degrees of separation; that we're all connected to, you know -- Anyone in the world you can find in a small number of hops. So it turns out that's a particular mathematical construction. So there's -- there's this idea of what Freenet is trying to do and then there's what Freenet actually does. And in reality people, not me but other published papers, have actually looked at the topology of Freenet and decided whether it was -- what type of -- you know, whether it was this topology or that topology. So in the end, although it attempts to have a particular nice topology with certain mathematical properties, it edges towards this sort of lazy one. And so we evaluated both as has been done in previous papers. And by running both, we determined that -- that this -- you know, exactly what I said; that modeling things as a uniform distribution is a -- or a uniform distribution is a nice model to distinguish between the relayer and the requester.

So although I can't compare it, as you said, to the real Freenet network, I believe I'm making a sound statistical conclusion about the efficacy of the test.

Note that Levine says that "*I mean this is a simulation, so there were no actual requests here*". Levine then uses another odd mathematical term "approximately uniform" which is very similar to the "roughly even" term used by the prosecution. We have assumed that something is uniform or not, and even or not. These are binary terms.

In the government response to our last motion, the prosecution states: "*Even the results generated by the application of the formula to the download requests at issue showed that it generated an estimate, because the actual number of block requests the (sic) Ofc. Turner received from the defendant's device fell outside of the formula's estimated range.*" (Govt. Reply Doc 80 p. 6). "*For the September 9, 2018 download, the formula estimated that an original request would seek approximately 127-250 blocks; a second level request would seek approximately 15-31 blocks. The actual request was for 126 blocks. (Id., ¶ 62.) Similarly, for the September 11, 2018 download, the formula estimated that an original request would seek approximately 92-182 blocks; a second level request would seek approximately 11-23 blocks. The actual request was for 69 blocks. (Id., ¶ 63.)*"

Here the government points out that the *formula* would have excluded two of the three files, but rather than stating that the *formula* did not flag the result as a downloader, the prosecution stated that the *formula* only generated an estimate, for FOI #2. This was also the case with FOI #1. For FOI #3, the *formula* predicted a range of requests from 31 to 64, and since 32 requests were received it flagged the defendant as the downloader. Only with FOI #3, did the *formula* show results that by using Officer Turners methodology, (Min Requests from manifest/number of peers = 31.5) would flag the defendant as the downloader. Only 1 out of 3 of the FOI's could have been flagged using the criteria of the *formula*'s estimated range. Of course this methodology is totally false, as we have stated ad nauseam, and apparently it does not matter anyway since it is only an estimate.

The peer review issue. In the affidavit, without divulging the title, the Levine paper is referred to as peer reviewed and published to provide a level of authenticity to the *formula*. The fact that a paper is peer reviewed is not a validation of the results shown in the *formula*. We contacted the actual reviewers of the Levine paper and were referred to the following document: "IEEE Publication Services and Products Board Operations Manual".

The IEEE publishes over 5 million academic papers, worldwide, each year, and this document defines the organization that handles this operation. A key statement is on page 73, "*Statements and opinions given in work published by the IEEE are the expression of the authors. Responsibility for the content of published articles rests upon the authors, not the IEEE.*" The peer review process does not validate the technical conclusions in a paper. The purpose of the peer review is ensuring the paper is suitable for publication. The importance of the "peer review" is widely overstated. We can supply the names and contact information for the actual reviewers of the Levine paper if requested.

The Court has requested a paper that claims the Levine method is false. We provided the following: "The Discredited Levine 2017 Approach Is Still Used" by DR. Arne Babenrauerheide, one of the Freenet developers. This paper is available on the Freenet Official website at Freenetproject.org. We pointed out that the academic community has ignored the Levine paper, and we could find no papers that either supported or disagreed with Levine. The government then came up with 10 citations of the Levine paper. Two of the ten papers were by Levine, a reference from the 2020 paper, and a reference from a Levine report on child pornography to DoJ. None of these papers claimed that the Levine method was valid, and we provide an exhibit in which we included the complete references from these documents, about one page total. We believe the government should supply a paper that shows the Levine method is valid and correct.

Finally, did Officer Turner act recklessly, knowingly, or intentionally in the generation of the Affidavit. The government has repeatedly noted that the FBI has been studying Freenet since 2011. Law enforcement released the Project Black Ice document in 2013. It is only reasonable that Officer Turner would be familiar with this document.

The following inaccuracies and omissions were made knowingly in the Affidavit:

1. no reference to FOAF routing in the Affidavit despite the fact that the referenced 2017 Levine paper states that Freenet uses FOAF routing
2. FOAF does not allow for an expected number of requests as required by the government *formula*
3. requests are not in practice distributed roughly evenly, as shown by Corbett, McF and others, because of FOAF
4. government, Doc. 80, p.7, states that theory and design in Freenet are different in practice but provides no support for this claim

5. What did Officer Turner tell Judge Payson as to how Freenet operates, (an explanation of the Formula) - and why was this not included in the Affidavit?

Good faith issue. We believe the Government was on constructive notice (if not actual) of disparate results with requests to connected nodes as shown by FBI data when multiple FBI nodes were connected. In support of this belief, the Affidavit (¶55) states: "*I am also aware through my training and experience that dozens of searches of digital devices have been conducted by law enforcement officers (either through court authorization or consent) related to targets whose IP addresses were identified based upon analysis of information from the Network's law enforcement computers, pursuant to which evidence of child pornography possession was located.*"

Since the Affidavit seems to be essentially repeated in multiple cases: Corbett, McF, and Looney, it seems that the FBI clearly is familiar with these cases and the problems therein, as they seem to be carefully removing information that might be problematic in the Affidavit. The prosecution points out: "*Quite the contrary, as the affidavit lays out, all the information at Ofc. Turner's disposal—his training, his experience, his conversations with other members of law enforcement, and his review of applicable case law—told him that the Formula was a reliable method for assessing the likelihood that evidence of child pornography would be found at a particular location*" (Govt. Reply Doc. 80 p. 13). We believe that the instances of multiple FBI nodes connected to the same suspect node is the typical case since only the case herein did not show multiple FBI nodes. Given that Officer Turner is aware of dozens of cases where searches have been performed, Officer Turner would have known that the even share methodology was false, because of the widely divergent numbers of requests received by multiple FBI nodes in the McF case from July, 2018, and no doubt other cases. Earlier than the case herein.

The prosecution repeatedly states that Officer Turner never uses the term "even share". This is true, although his descriptions, such as Figure 1, always show even distribution of requests among the peers of the node. The prosecution states in Doc 80, p. 11: "*However, Dr. Levine's testing has shown that an even share model does, in practice, accurately predict whether a particular device is an original requestor.*" The results of the cases with multiple FBI nodes show conclusively that the even share model does not fit Freenet operation since in reality the distribution of requests is clearly not even.

Exhibits

Complete Levine Citations as Found by the Government